DOCUMENT RESUME

ED 241 912 CS 007 550

AUTHOR Harlin, Rebecca P.
TITLE Primary Children's Print Awareness as a Predictor of Reading Achievement.
PUB DATE 29 Apr 83
NOTE 16p.; Paper presented at the Annual Conference of the New England Educational Research Organization (Rockport, ME, April 27-29, 1983).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Age Differences; Educationally Disadvantaged; *Predictive Validity; *Predictor Variables; Primary Education; *Reading Achievement; *Reading Research; Reading Tests; *Scores; *Standardized Tests; Test Reviews
IDENTIFIERS Concepts about Print Test; *Print Awareness

ABSTRACT

Concerned with the relationship of a print awareness indicator to subsequent reading achievement, a study measured changes in the development of print awareness across age and grade levels as well as across time. It also compared the levels of print awareness in lower ability and educationally disadvantaged children in second and third grades to that of their predecessors in kindergarten and first grade. The sample consisted of 125 primary grade children, including two kindergarten, two first grade, and all Title I second and third grade classrooms in a central Florida elementary school. All subjects were tested with the Concepts About Print Test, Sand. Data were analyzed using Pearson-product-moment correlation, analysis of variance, linear and multiple regression analysis, and factor analysis. Scores on the Sand were found to correlate significantly with the Comprehensive Tests of Basic Skills (CTBS), Levels B, C, and I, and the Metropolitan Readiness Tests (MRT), Levels I and II. Linear trends were found for the Sand scores and the subjects' age and grade levels. Two subscales of the Sand were identified, one correlating with the MRT and the other with the CTBS. Results indicated that the Sand was an effective predictor of reading achievement for primary grade children. (Tables on test results are included.) (Author/MM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

ED241912

Primary Children's Print Awareness as a Predictor of Reading Achievement

Rebecca P. Harlin, Ph.D.

Department of Elementary and Secondary Education and Reading

State University College

Genesco, New York

New England Educational Research Organization

Annual Conference

Rockport, Maine

April 29, 1983

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Rebecca P. Harlin

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

CS 007 530

Abstract

This study examined the relationship of a print awareness indicator to subsequent reading achievement. The major focus was on measuring changes in the development of print awareness across age and grade levels as well as time. It was also the intent of the study to compare the levels of print awareness in lower ability and educationally disadvantaged children in second and third grades to that of their predecessors in kindergarten and first grade. The sample consisted of 125 primary grade children in a central Florida elementary school. It included two classes of kindergarteners, two of first graders, and all Title I second and third graders. All subjects were tested with the Concepts About Print Test, Sand, by the researcher. The data were analyzed using Pearson-product-moment correlation, analysis of variance, linear and multiple regression analysis, and factor analysis. Scores on the Sand were found to correlate significantly with the Comprehensive Tests of Basic Skills, Levels B, C, and I, and the Metropolitan Readiness Tests, Levels I and II. Linear trends were found for the Sand scores and the subjects' age and grade levels. Two subscales of the Sand were identified; one correlated with the MRT, the other with the CTBS. It was concluded that the Sand was an effective predictor of reading achievement for primary grade children.

Each year as the first day of school begins, millions of children enter classrooms for the first time in their lives. Many of these children expect to learn how to read (Brumbaugh, 1940). However, what they expect to learn, what they actually will learn, and how well they will learn may be dependent upon factors other than intelligence and home background. Their success in learning to read may be closely related to their mastery of specific tasks before they entered school. These tasks may be an understanding of the reading process itself, linguistic awareness, and familiarity with print concepts. It has become apparent from the research in the area of reading readiness that the aforementioned tasks are often overlooked in determining readiness for reading. More research is needed to determine the extent of children's cognitive confusion in learning to read and the effect of that confusion on subsequent reading achievement.

Does cognitive confusion about written language affect reading achievement? This study examined the relationship of a print awareness indicator, the Concepts About Print Test, Sand, to subsequent reading achievement. The following questions were raised: (1) Is there a difference in the development of print awareness, (a) among age levels, (b) among grade levels, (c) between prereaders and readers? (2) Does the level of print awareness estimate the level of reading achievement?

Several studies of beginning readers (Day, Day, Spicola, and Griffin, 1979; Ehri, 1979) have indicated that there is a relationship between linguistic awareness and subsequent success in learning to read; however, the strength and the nature of the relationship has not been firmly established. Similarly, there is little agreement as to whether an

awareness of print is a developmental sequence of skills (Francis, 1973; Meltzer and Herse, 1969) or a unified process (Kingston, Weaver, and Figa, 1972).

This study was concerned with the relationship of linguistic awareness to subsequent reading achievement. The major focus was on measuring the changes in the development of print awareness across age and grade levels as well as time. It was also the intent of this study to compare the levels of linguistic awareness in lower-ability, educationally disadvantaged children in second and third grades to that of their predecessors in kindergarten and first grade.

Method

The Sample

All participants in the study were selected from an urban school whose population consisted of lower and middle class children. For the purposes of the study, 125 subjects from primary grade classrooms were chosen - two classes of kindergarteners, two classes of first graders, and all Title I second and third grade students. Selection of kindergarten and first grade students involved intact classrooms which provided a balance in that sample of race, sex, and ability level since the students were administratively assigned to heterogeneous classrooms. All Title I subjects were selected on the basis of the school district's selection criterion, a score at or below the 40th percentile on either the comprehension subtest or the total reading test of the Comprehensive Tests of Basic Skills. Thus, within the five second and third grade classrooms, all students who met this criterion became Title I target students and were included in the study.

The Instruments and Data Collection

Four instruments were used to evaluate the performance of the subjects on several variables - reading readiness, reading achievement, and print awareness. These instruments included the Metropolitan Readiness Tests Level I, Form Q and Level II, Form P; the Metropolitan Achievement Tests, Primary I, Form H, and Primary II, Form H; the Comprehensive Tests of Basic Skills Level B, Form S, Level C, Form S, and Level I, Form S; and the Concepts About Print Test, Sand.

In September, the Concepts About Print Test, Sand, was administered individually to each first, second, and third grade subject by the researcher. Testing took place in an empty classroom with only the researcher and the subject present. At the beginning of the session, the storybook, Sand, was introduced to the child. It was explained that the researcher would read the book and ask the child questions throughout the story. Following the procedures outlined in Clay's The Early Detection of Reading Difficulties, the 24-item checklist was given. Scoring for each item was completed as the child responded. Points were awarded on the basis of one point for a correct response and zero for an incorrect or no response. No partial credit for any item was given. Total points were added for each subject to determine the raw score. No feedback was given to the child concerning the appropriateness of his/her responses. In January, all kindergarten subjects were tested by following the same procedure and testing conditions. In late March and April, all first grade and Title I second and third grade subjects were retested following the same procedure.

For the first grade subjects, the Metropolitan Reading Readiness Tests, Level II, Form P were administered and scored by their classroom teachers during the second week of school in September. In January, the kindergarten students were given the MRT, Level I, Form Q, by their classroom teacher who also scored the tests. Results of both batteries were used as a standardized indicator of reading readiness.

For the Title I subjects, the appropriate level of the Metropolitan Achievement Tests, Form H was administered by the researcher and another Title I teacher. Since this test was being used to evaluate student progress in the Title I program, students were given a test one level lower than their current grade placement - Primary I was administered to the second graders; Primary II to the third graders. Students were tested during the district pre- and post-testing periods in September and April

All first, second, and third grade subjects, along with their peers, were given the Comprehensive Tests of Basic Skills, Form S, by their classroom teachers. Subjects were tested in groups of 15 during the district week-long testing period. The third grade subjects who received Level I were tested in late March. In mid-April, the first graders were given Level B, while the second graders received Level C. All test booklets were machine-scored. Test results for each subject were obtained from the school printout.

Results

Relationship of Print Awareness to Age and Grade Level

A simple linear regression of the Sand scores on age (in months) was computed. The estimated regression slope was equal to C.305 with a

standard error of 0.026. A significant linear relationship exists between scores on the Sand and age ($F = 129.6$, $p < 0.001$). Thus, the older subjects demonstrated greater print awareness than the younger subjects.

Using a one-way analysis of variance, the means for each group on the Sand were compared. The average scores on the Sand were found to be significantly different ($F = 63.40$, $p < 0.001$) among the grade levels studied. The scores on print awareness increased both by age and grade level of the subject.

Table 1 goes about here

However, the change in level of print awareness was not found to be equal for all grades. When the mean gain scores for the first graders and Title I second and third graders on the Sand (fall and spring administrations) were compared using an ANOVA, there were significant differences among grade levels ($F = 38.64$, $p < 0.01$). The mean of the first grade gain scores was significantly higher than that of both Title I groups, indicating a greater increase in print awareness over time. To compare the level of print awareness of prereaders with that of readers, a confidence interval for the difference in the average means of the non-Title I students with those of the Title I students was constructed. Using the Bonferroni procedure, the value for the estimate of the difference was found to be -10.03. A 95 percent confidence interval for the population parameter yielded a difference in the level of print awareness between the prereaders (non-Title I) and the readers (Title I). The average print awareness was greater for the readers.

Relationship of Print Awareness to Reading Achievement

Table 2 goes about here

To determine the relationship between print awareness and reading readiness, the scores on the Sand were compared to the pre-reading composite scores on the Metropolitan Readiness Tests using a Pearson-product-moment correlation. The Sand was found to have a significant correlation with both kindergarten and first grade levels of the MRT (0.616, $p < 0.001$); however, a stronger correlation was found for the first grade test (0.767, $p < 0.001$) than for the kindergarten test (0.508, $p < 0.01$). Thus, there was a moderately strong, positive relationship between the level of print awareness and the level of reading readiness.

Does the level of print awareness estimate the level of reading achievement? Through two different analyses, the answer to this question was found. Using the Pearson-product-moment correlation, the coefficient for the fall administration of the Sand with the CTBS was 0.686 for all Title I subjects, and 0.525 for the spring administration of the Sand. Both correlations were significant at the 0.01 and 0.05 levels. The coefficient for the fall Sand with the MAT was 0.660, while that for the spring Sand was 0.638 for the Title I subjects. Again, both were statistically significant at the 0.01 and 0.05 levels.

When the Pearson-product-moment correlations were calculated for each grade level for the fall Sand and the CTBS, the following coefficients resulted--first grade 0.803; second grade Title I, 0.570; third grade Title I, 0.797, and overall correlation 0.67. All were statistically significant at the 0.05 level, with those for the first and third grade

Title I students also significant at the 0.01 level. For the MAT, the grade level coefficients were 0.612 for the fall Sand and Primary I (second grade); 0.515 for the spring Sand and Primary I; 0.523 for the fall Sand and Primary II; 0.672 for the spring Sand and Primary II (third grade). All correlation coefficients were significant at the 0.05 level. Thus, for the first and third grade subjects, the fall administration of the Sand was more highly correlated with scores on the grade level reading achievement test, the CTBS, Levels B and I, respectively, than for the second grade subjects who received Level C. For the Title I subjects, the fall Sand had a higher correlation with the second grade test MAT Primary I (the out-of-level measure of reading achievement) than for the third grade test, Primary II. When the data for the Title I subjects' fall administration of the Sand were combined with those of the MAT and CTBS in a linear regression analysis, both achievement measures followed a positive linear trend with the Sand.

Subscales of Print Awareness

Factor analysis was used to make an accurate identification of those factors or subscales of print awareness. The 24 items of the Sand were regarded as variables. The factor pattern coefficients resulting from the oblique rotation yielded two factors, or subscales. There were not a sufficient number of items loading on a third factor to warrant its inclusion as a third factor. While most items had loadings approaching or exceeding .40, four items did not. However, Items 1 and 8 which had loadings of .26 and .27 respectively appear to load on Factor One. Items 18 and 21 do not load on either factor. Support for inclusion of Items 1

8 with those loading on Factor One is supported through a reliability analysis of the subscale (the overall alpha is reported to be 0.884). Similarly, Items 6, 15, and 20 which had double loadings did not reduce the reliability coefficient of the second subscale by their inclusion (the overall alpha is reported to be 0.875).

Table 3 goes about here

Using Pearson-product-moment correlations, the relationship of each subscale to the reading readiness measure, the MRT, and to the reading achievement measure for all three grades, the CTBS, was determined. Factor One, composed of items relating to directional print behavior and book orientation, was found to have a significant relationship (0.516, $p < 0.01$) to the pre-reading composite score on the MRT, but a weaker correlation with reading achievement (0.39, $p < .01$). Factor Two, consisting of items relating to word and line order as well as punctuation, was found to have a weaker correlation with the MRT (0.499, $p < .01$) but a stronger correlation with the CTBS (0.682, $p < 0.01$). Hence, Factor One may focus more closely on reading readiness behavior while Factor Two is associated more directly with the reading mode.

Conclusions and Implications

Upon examination of the study's results, it was learned that the Concepts about Print Test, Sand was an effective predictor of reading achievement for subjects older than those in previous studies (Day, Day, Spicola, and Griffin, 1979; Johns, 1980). The Sand was also demonstrated

to correlate highly with a widely accepted reading readiness measure, the Metropolitan Readiness Tests. Furthermore, the correlation of the Sand with the MAT, Primary I for the Title I second graders, 0.61, approached that of the MRT with the MAT, 0.70. The significant correlations of the Sand with the CTBS further demonstrated its effectiveness as a predictor of reading achievement. Therefore, these results support the use of the Sand for young children from kindergarten through third grade, and especially for disabled readers like the Title I subjects.

For teachers of primary grade children, as well as reading clinicians, the Sand has been shown to be an effective indication of the child's knowledge and understanding of print concepts. Its ease of administration should recommend its use in the classroom as well as the reading clinic. The close correlation found between the Sand and the grade level measure of reading achievement, the CTBS, demonstrated the Sand's predictive qualities. As part of preventative strategy, the Sand may be used to identify potential reading failure early in the school year, thus facilitating intervention strategies. For the reading clinician, the appropriateness of the Sand as a diagnostic tool for young disabled readers had been shown.

According to one theory of linguistic awareness, there is an interaction of reading acquisition and print awareness. As children learn to read, they become more sensitized to print (Ehri, 1979; Ryan, McNamara and Kenney, 1977). The data from this study indicated that there was an increase in print awareness between readers and prereaders. Furthermore, it was shown that as the first graders were exposed to reading instruc-

tion, their print awareness increased significantly. While there were no stages defined by the data, it was shown that print awareness had a positive linear relationship with age and grade level. The increase of print awareness by first graders may lend support to the interactive theory of reading acquisition and print awareness.

References

Brumbaugh, F. (1940). Reading expectancy. Elementary English, 17, 153-155.

Day, K. C., Day, H. D., Spicola, R., & Griffin, M. (1979). The development of orthographic linguistic awareness in kindergarten children and the relationship of this awareness to later reading achievement. In Reading psychology (in press).

Ehri, L. C. (1979). Linguistic insight: Threshold of reading acquisition. In T. G. Waller, & G. E. MacKinnon (Eds.), Reading research: Advances in theory and practice (vol. 1). New York: Academic Press.

Francis, H. Children's experience in reading and notions of units in language. British Journal of Educational Psychology, 43, 17-23.

Johns, J. L. (1980). First graders' concepts about print. Reading Research Quarterly, 15, 529-549.

Kingston, A. J., Weaver, W. W., & Figa, L. E. (1972). Experiments in children's perceptions of words and word boundaries. In F. P. Greene (Ed.), Investigation relating to mature reading. Milwaukee: National Reading Conference.

Meltzer, N. S., & Herse, R. (1969). The boundaries of written words as seen by first graders. Journal of Reading Behavior, 1, 3-14.

Ryan, E. B., McNamara, S. R., & Kenney, M. (1977). Linguistic awareness and reading performance among beginning readers. Journal of Reading Behavior, 9, 394-400.

TABLE I

MEANS FOR THE FIRST ADMINISTRATION

OF THE SAND BY GRADE

Grade	N	Mean	Standard Deviation
Kdgn	32	7.60	3.61
First	34	8.94	5.23
Second Title I	30	16.66	3.27
Third Title I	30	20.00	3.18

TABLE 2

AVERAGE GAIN IN TOTAL SCORE ON SAND

FROM FALL TO SPRING ADMINISTRATION

Grade	N	Mean Gain	Standard Deviation
First	29	9.07	3.95
Second Title I	27	2.83	2.62
Third Title I	30	2.21	2.10

TABLE 3

FACTOR PATTERN FOR SAND

Item	Factor 1	Factor 2
1	0.260	-0.023
2	0.671	-0.070
3	0.834	-0.082
4	0.801	-0.029
5	0.863	0.013
6	0.359	0.393
7	0.673	0.048
8	0.277	0.042
9	0.535	0.216
10	0.077	0.485
11	0.479	0.005
12	-0.031	0.781
13	-0.105	0.827
14	-0.111	0.852
15	0.321	0.379
16	0.452	0.241
17	0.03	0.514
18	-0.005	0.063
19	0.520	0.035
20	0.294	0.401
21	0.149	0.255
22	0.503	0.107
23	0.271	0.402
24	0.338	0.250